Wetland Mitigation Monitoring for FAP 331 (IL 13) - 1999

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Introduction

Road construction for FAP 331 (IL 13) resulted in impacts requiring 9.15 acres of wetland mitigation. A compensation plan was prepared which called for floodplain forest, emergent, and shrub scrub (changed to cypress gum swamp) wetland creation, located in a 20 acre abandoned agricultural field in western Saline Co. The field contained approximately 3.9 acres of wetland prior to alteration of the site. Approximately 2.5 acres (the area originally planned for emergent and cypress-gum wetlands) were excavated to a depth of 6 to 12 in. A shallow berm, including water control structure, was established at the southeastern corner of the site in order to retard sheetflow and hold more surface water on-site. The wetland creation site was completed in 1997. Vegetation planting was carried out in 1997 and 1998.

In 1999, field monitoring was conducted on 19 August. This report details results of the 1999 monitoring. Project goals, objectives and performance criteria are included, as are monitoring methods, monitoring results, summary information and recommendations. A wetland mitigation site assessment (Morris et al., 1994) and hydrogeologic characterization report (Rorick and Hilchen, 1995) were prepered by the Illinois Natural History Survey and Illinois State Geological Survey. A wetland mitigation plan was prepared by Smith (1995).

Project Goals, Objectives and Performance Criteria

Proposed goals and objectives are based on information contained in the original IDOT project request (Brooks, 1999) and the project Special Provisions (IDOT, no date). Performance criteria are based on those specified in the U. S. C. O. E. Wetland Delineation Manual (Environmental Laboratory, 1987), and Guidelines for Developing Mitigation Proposals (USACOE, 1993). Each goal should be attained by the end of the five year monitoring period. Project goals, objectives and performance criteria are listed below.

Created Wetland Site

Project goal 1: The created wetland site should be determined to be jurisdictional by current federal standards.

Objective: The created wetland should compensate for losses of 4.7 acres of forested wetland, emergent wetland, and shrub scrub wetland. A total of 9.15 acres of wetland compensation is required.

Performance Criteria: The entire created wetland should satisfy the three criteria of the federal wetland definition: hydrophytic vegetation, hydric soils and wetland hydrology.

A. Predominance of hydrophytic vegetation - More than 50% of the dominant plant species must be hydrophytic.

B. Presence of hydric soils - Hydric soil characteristics must be present, or conditions favorable to the formation of hydric soil must persist at the site.

C. Presence of wetland hydrology - the created wetland must be inundated at an average depth of less than 2 m (6.6 ft) or have soils saturated to the surface for at least 12.5 % of the growing season.

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

Objective: The created wetland should compensate in-kind for loss of forested, shrub scrub, and emergent wetlands. The wetland compensation should be composed of vegetation characteristic of forested, shrub scrub, and emergent wetlands.

Performance Criteria: Planted herbaceous and woody species should have good survivorship and health over the five year monitoring period. At least 50% of the plant species present should be non-weedy, native, perennial species. None of the three most dominant species in any stratum should be nonnative, or weedy species.

Methods

Monitoring will be performed on the created wetland site. Illinois Natural History Survey personnel monitored the site in 1999 and will continue yearly monitoring through 2003 (five years). The Illinois State Geological Survey has been tasked to monitor hydrology. Monitoring reports on the status of the wetland creation site will be submitted annually. The likelihood of meeting the proposed goals and performance criteria will be addressed. If evidence is discovered, indicating that the goals/performance critieria will not be met by the end of the five year monitoring period, written management recommendations will be submitted to IDOT in an effort to correct the problems.

Project Goal 1

Created wetland areas will be measured in the field, plotted on aerial photographs, and acreages determined with digital planimeter.

A. Hydrophytic Vegetation - Within the 2.5 acre excavated area, where planting was carried out, species composition (relative frequency, relative dominance, and Importance Value) will be determined annually through quantitative vegetation sampling of permanent plots. Five parallel transects were established at 15.4 m (50 ft) intervals. Sampling points were

established at 15.4 m (50 ft) intervals on each transect. At each sampling point, vegetation was tallied by species and percent cover in 24, 1 m^2 quadrats. For the remainder of the site, using visual estimation, the dominant species of vegetation in each stratum are determined. Dominance is based on Importance Value, a numerical average of species' relative frequency, density and aerial coverage (or basal area) (Cox 1985). In each stratum dominant species include, starting with the most dominant, those species whose Importance Values, when summed in descending order, immediately exceed 50%, as well as any additional species whose Importance Values are 20% or greater (Federal Interagency Committee for Wetland Delineation, 1989). Dominant species are assigned wetland indicator status ratings (Reed, 1988). Any plant rated facultative or wetter (FAC, FAC+, FACW-, FACW, FACW+ or OBL) is considered hydrophytic. Hydrophytic vegetation is determined to be present if greater than 50% of the dominant species are hydrophytic (Environmental Laboratory 1987).

B. Hydric Soils - Soil cores collected from the mitigation site are examined for the presence of redoximorphic features (Environmental Laboratory 1987). This site includes 2.5 acres of shallow (≤ 1 ft) excavation, and a shallow berm erected in the vicinity of the southeast corner of the site. The excavated area and the area near the berm are expected to display changing soil characteristics as those portions of the site adjust to new hydrologic conditions. The western portion of the site is not expected to experience soil conditions that change over time.

C. Wetland Hydrology - The Illinois State Geological Survey has been tasked to monitor this site. A total of eighteen monitoring wells and six stage gauges have been installed (Fucciolo et al., 1999). Information provided by ISGS concerning hydrology of the site will be incorporated into this report. In addition, visual inspection of the site for field indicators of wetland hydrology, such as landscape position, inundation or surface saturation or wetland drainage and debris patterns, will be used to determine the presence of wetland hydrology (Environmental Laboratory 1987).

Project Goal 2

A. Survival of planted species – At this site, complications prohibit the determination of percent survival of planted species. For both woody and herbaceous species, there have been substitutions and omissions of species listed in the planting plan and the number of individuals per species has been altered and is not known. In addition, the woody species have been planted in different areas than what is specified in the mitigation plan and apparently have been placed randomly, with no stakes to mark planting locations. The planting boxes for herbaceous species had been removed before the first year's monitoring fieldwork began, and species have begun to spread beyond their planting cells. Therefore, in 1999, for woody species, the areas planted were determined and lists of observed live, planted species prepared. In following years, quantitative sampling of these areas will be used to estimate numbers of live, planted woody species. In 1999, while the outlines of the recently removed planting boxes (pods) were still apparent, aerial extent, percent cover and a qualitative success rating were determined for each cell of herbaceous planting. In subsequent years, as the various species spread or decline, it will be increasingly difficult to assess each planted herbaceous species in relation to its original planting cell. Therefore, for each of the nine original planted species, aerial extent, percent cover and a qualitative success (population health) rating will be determined and related to values given in the 1999 sampling season.

B. Vegetation - Dominant plant species in each stratum in the emergent wetland and wet meadow (oak-hickory wetland) will be determined annually by quantitative sampling.

Dominant plant species for the other created wetland communities within the site will be determined by visual estimation. Lists of dominant species will be examined in an attempt to ensure that, in the created wetlands, none of the three most dominant species are weedy or non-native. A species list will be prepared annually for each community in order to ensure that at least 50% of the plant species are non-weedy, native and perennial. A Floristic Quality Index will be computed annually for each plant community. Since the areas of old field and wet meadow on this site are rapidly succeeding to forest, the 1994 cover type map and report will be updated.

Faunal Surveys

In addition to stated performance criteria, INHS personnel will conduct annual surveys of herpetofauna and avifauna.

Herpetofauna

The compensation site was visited by INHS personnel on 12 and 25 May 1999. The main objective was to conduct visual encounter surveys throughout the site and compile a species list. Emphasis was placed on amphibian species and evidence of breeding and recruitment of these species. Fishless, ephemeral wetlands are among the rarest habitat types in Illinois and it is these wetlands that many native amphibian species utilize for reproduction. We surveyed the entire property, but special attention was directed to the emergent wetland. A large ditch/pool located just off the southwest edge of the property was also surveyed. A list was compiled of all the amphibians and reptiles encountered at the wetland compensation site to date.

Results

Project Goal 1: The created wetland site should be determined to be jurisdictional by current federal standards.

This site originally supported 1.58 ha (3.9 acres) of wetland. By our estimates, shallow excavation and berm constuction have resulted in creation of 2.91 ha (7.2 acres) of additional wetland. All wetland areas are underlain by Bonnie silt loam, poorly drained, which is a hydric soil. Within the excavated area, a 0.49 ha (1.2 acre) emergent wetland now exists, surrounded by a 0.77 ha (1.9 acre) wet meadow (oak–hickory wetland). The emergent wetland is dominated by *Juncus acuminatus* (OBL), *Sagittaria latifolia* (OBL), *Ludwigia palustris* (OBL), *Panicum rigidulum* (FACW), and *Eleocharis obtusa* (OBL). The wet meadow is dominated by *Juncus interior* (FAC+), *Panicum acuminatum (FAC), Eupatorium serotinum* (FAC+), *Lespedeza cuneata* (NI), *Pycnanthemum virginianum* (FACW+), *and Lycopus americanus* (OBL). The hydrophytic vegetation criterion is thereby satisfied for both of these sites. The construction of a shallow berm at the southeast border of the site has impeded surface flow and resulted in the creation of approximately 1.67 ha (4.1 acres) of shrub scrub wetland (young forest) in the eastern portion of the site. This community is dominated by *Acer rubrum* (FAC), and *Fraxinus pennsylvanica* (FACW) in both sapling and shrub layers, thereby satisfying the hydrophytic vegetation criterion (Appendix 1).

In all created wetland areas, field indicators of wetland hydrology were observed. These included wetland drainage patterns, driftlines, water stained leaves and low, level topography. In addition, the Illinois State Geological Survey (ISGS) established four monitoring wells and three stage gauges within the created wetland sites. Based on well and stage gauge data,

these sites meet the wetland hydrology criterion (saturation or inundation for at least 12.5% of the growing season) (fig. 1, 2).

On the other hand, based on monitoring well data, the ISGS has estimated 4.7 ha (11.6 acres) of created wetland, while our estimate is 2.91 ha (7.2 acres) (Fucciolo et al. 1999). The main area of contention is shrubland in the western and north-central portion of the site. The ISGS draws a wetland boundary for this community based on one well: Well 5S. Personal observation leads us to believe that this well is situated in a small, isolated wetland, and that a sizable area east and northeast of that point is nonwetland. (The ISGS has stated that new wells will be established in the area in question.) In this area, soils were determined to be Banlic silt loam, somewhat poorly drained, nonhydric. Dominant plant species were *Acer rubrum* (FAC) – Sapling Layer, and *Solidago canadensis* (FACU), *Festuca pratensis* (FACU-), and *Vernonia missurica* (FAC+) – Understory, thereby failing to meet the hydrophytic vegetation criterion. No field indicators of wetland hydrology were observed (Append. 1).

Project goal 2: The created wetland should meet minimum standards as to floristic composition.

A. Survival of Planted Species

Woody Species - The wetland mitigation plan called for creation of 7.3 acres of forested wetland and 1.4 acres of shrub scrub wetland. The area designated for forested wetland was not planted, and 0.77 ha (1.9 acres) of forested (oak-hickory) wetland was planted in the area designated for shrub scrub. Cypress – gum wetland has been substituted for shrub scrub, and 0.49 ha (1.2 acres) of this planting type has been superimposed over the emergent wetland planting.

The spacing of planted woody species appeared to be at random, and individuals were difficult to locate in the dense herbaceous cover. Therefore we did not attempt to quantify the woody species planted. In the oak – hickory wetland, the following live, planted species were observed: *Carpinus caroliniana, Carya illinoensis, Cornus racemosa, Crateagus phaenopyrum, Liquidambar styraciflua, Nyssa sylvatica, Quercus palustris, Acer rubrum, Betula nigra, Fraxinus pennsylvanica.* (*A. rubrum, B. nigra,* and *F. pennsylvanica* appeared to be planted but may have become established naturally.) *Carya laciniosa, C. ovata, Quercus bicolor, Q. pagoda. Q. shumardii, Crateagus mollis, Lindera benzoin, Viburnum dentatum* and *V. prunifolium* were not observed. In the cypress – gum wetland, the following live, planted species were observed: *Cephalanthus occidentalis, Itea virginica* and *Taxodium distichum.* Planted *Fraxinus pennsylvanica, Nyssa sylvatica, Foresteira acuminata* and *Ilex decidua* were not observed. Our feeling is that the densities of planted woody species in both areas are lower than specified.

Herbaceous species – Within the excavated portion of the site, a 0.49 ha (1.2 acre) emergent wetland has become established, thus exceeding the planned 0.84 acre. In the emergent wetland area, herbaceous species were planted in five, 20 ft X 50 ft, and one 20 ft X 30 ft, pods, each consisting of a number of (two to eight) smaller cells of varying sizes. The corner stakes of the planting cells had been removed prior to sampling , and the planted herbaceous species had begun to spread beyond their cells.

We identified nine planted species: *Scirpus americanus, Scirpus validus, Scirpus atrovirens, Sparganium eurycarpum, Sagittaria latifolia, Alisma plantago aquatica, Iris shrevii, Pontederia cordata,* and *Eleocharis erythropoda. Eleocharis erythropoda*

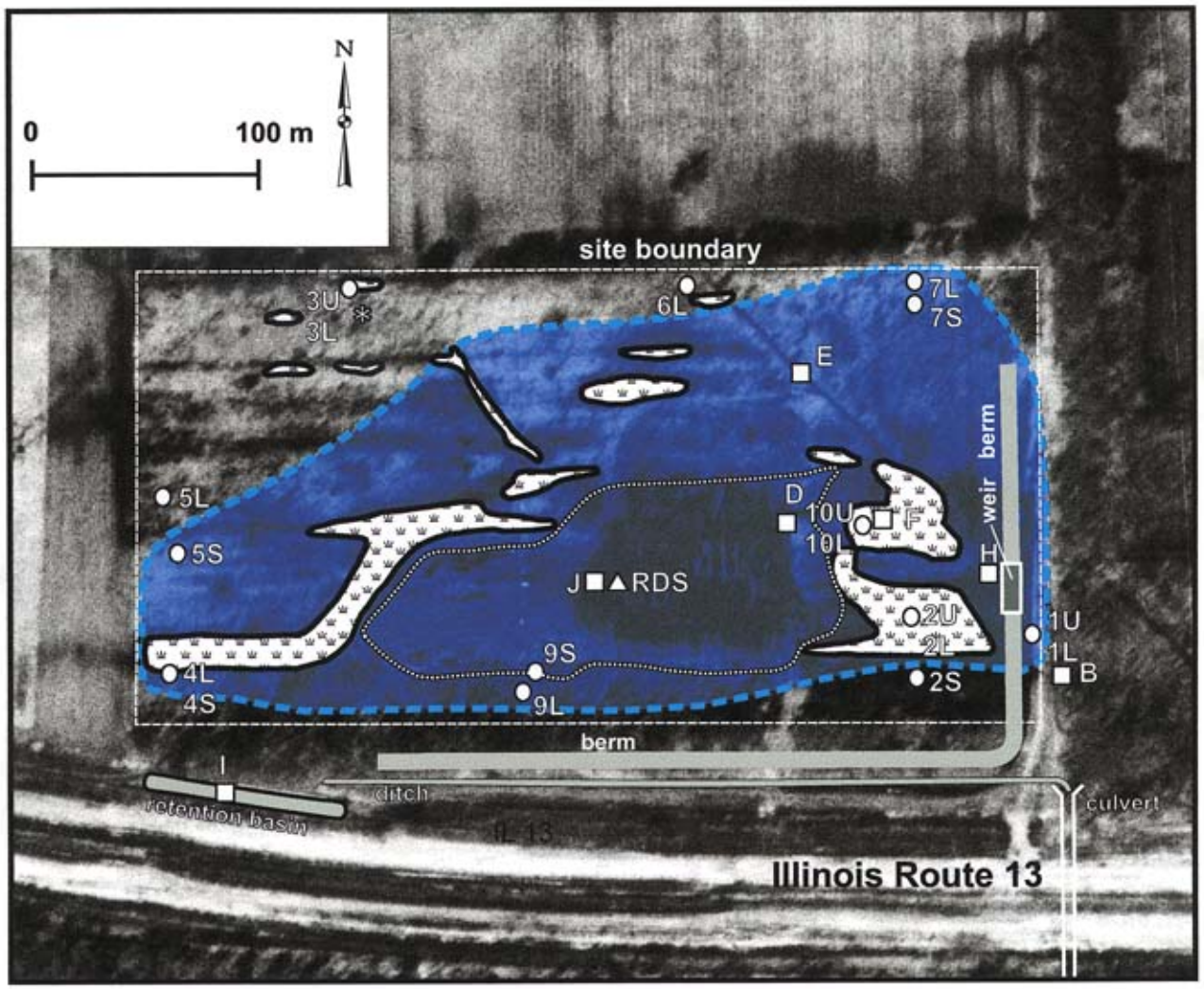
Saline County Wetland Compensation Site

(FAP 331)

Estimated Areal Extent of 1999 Wetland Hydrology

based on data collected between September 1, 1998 and September 1, 1999

map based on unrectified aerial photography from IDOT (Spring 1998, NAPP 22-441)



pre-existing wetland

estimated areal extent of 1999 wetland hydrology

estimated areal extent of grading

inferred boundary

○ monitoring well

□ stage gauge

△ RDS data logger

❄ rain gauge

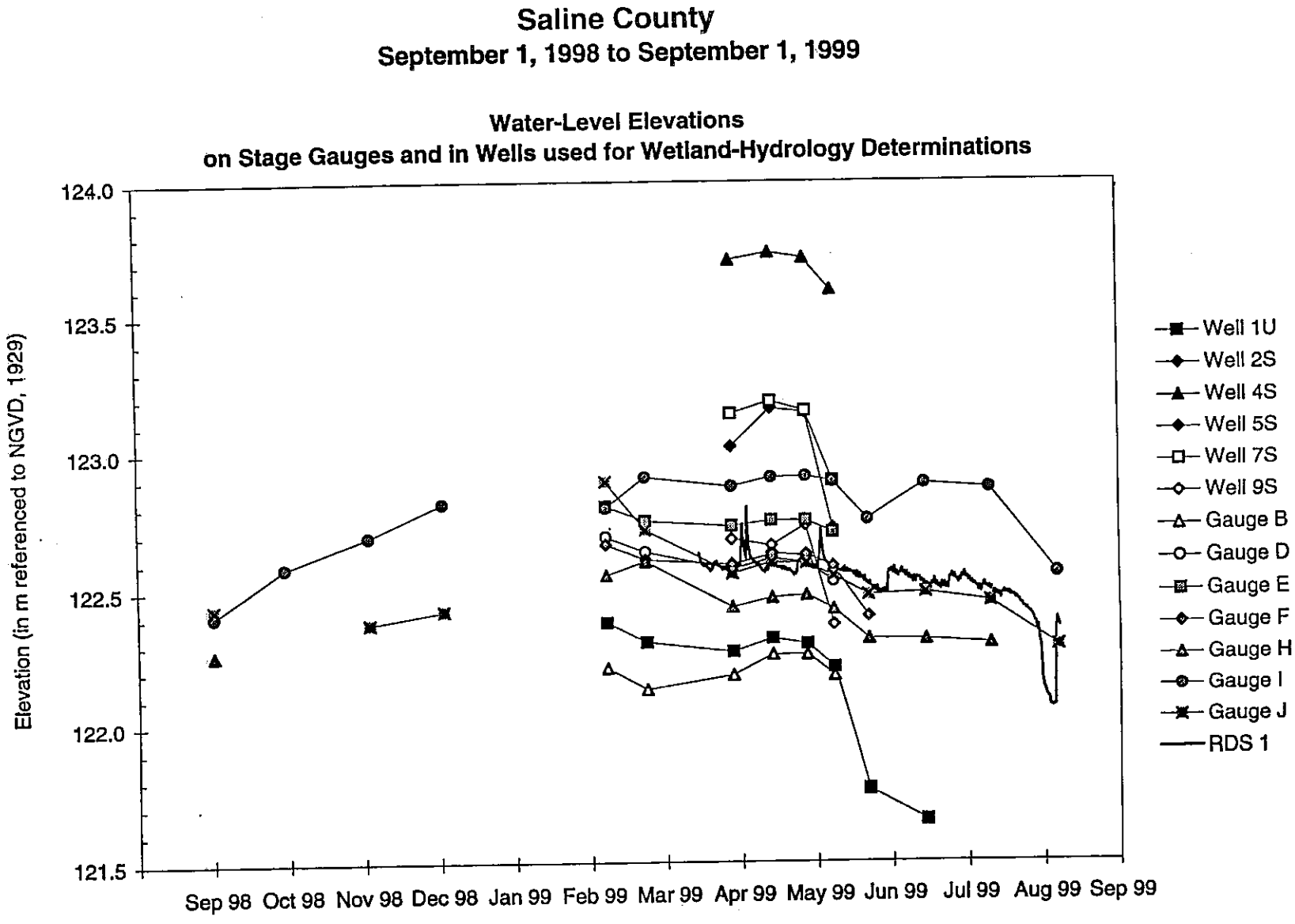


figure 2. Water level elevations used for wetland hydrology determinations.

appears to have been substituted for *E. acicularis*, and *P. cordata* for *Sagittaria rigida*. *Sagittaria latifolia* and *Scirpus atrovirens* are naturally occurring and abundant onsite. *Scirpus cyperinus, Asclepias incarnata, Carex annectans*(similar to *C. vulpinoidea*), and *Ludwigia polycarp*a do not appear to have been planted, but are also naturally occurring and abundant onsite. In general, all planted species apppear to be doing well and spreading vegetatively. The aerial extent of planted species has increased from 0.13 acre to 0.23 acre in the two years since planting. *Scirpus americanus, Scirpus validus, Sparganium eurycarpum, Pontederia cordata*, and *Sagittaria latifolia* are doing especially well (Table 1).

B. Vegetation

The emergent wetland is dominated by *Juncus acuminatus, Sagittaria latifolia, Ludwigia palustris, Panicum rigidulum*, and *Eleocharis obtusa*. In this community, none of the dominant species are weedy or non-native. The wet meadow (oak-hickory wetland) is dominated by *Juncus interior, Panicum acuminatum, Eupatorium serotinum, Lespedeza cuneata, Pycnanthemum virginianum, and Lycopus americanus*. In this community, the third most dominant species, *Eupatorium serotinum*, is considered weedy (FQI=1). This species, however is native and a common occurrence in moist to wet fields. It is not known to detrimentally affect more conservative native species. The fourth most dominant species, *Lespedeza cuneata*, is an extremely aggessive, noxious alien weed. The continued abundance of this species on the site is of considerable concern. The shrub scrub wetland is dominanted by *Acer rubrum* and *Fraxinus pennsylvanica* in both sapling and shrub layers. Therefore, no weedy or non-native species are dominant here. The north-central and western portions of the site are currently nonwet shrubland. There is a possibility, however that, in time, the berm at the southeast border may retard sheetflow from this area to the point that a portion of it may develop wetland hydrology. Therefore, the floristic composition of the community was examined. The dominant species are *Acer rubrum* – Sapling, and *Solidago canadensis, Festuca pratensis*, and *Vernonia missurica* – Understory. The two most dominant understory species are noxious weeds. *Solidago canadensis* is a native weed (FQI=1) that persists and dominates herbaceous communities, and crowds out more conservative species. *Festuca pratensis* is an exotic species with similar characteristics (Tables 2, 3).

None of the plant communities at this site have greater than 50% non-native, weedy or annual species. In addition, a number of the annual species in each plant community are naturally occurring, and, in many cases, desirable species. In each community, only a few of the weedy species are of serious concern.

In the emergent wetland, 19.4% of the species present are non-native or weedy. Six of the annual species present are desirable: *Ammannia coccinea, Bidens connata, Eleocharis obtusa, Erechtites hieracifolia, Phyllanthus caroliniensis*, and *Polygonum pensylvanicum*. Four of the weedy species present are cause for concern: *Lythrum salicaria, Phragmites communis, Solidago canadensis, Typha angustifolia*. In the wet meadow (oak-hickory wetland), 27.5% of the species present are non-native or weedy. Three of the annual species present are desirable: *Bidens aristosa, Phyllanthus caroliniensis*, and *Polygonum pensylvanicum*. Four of the weedy species present are cause for concern: *Lespedeza cuneata, Phragmites communis, Solidago canadensis*, and *Typha angustifolia*. In the shrub scrub wetland, 27.3% of the species present are non-native or weedy. The annual species, *Bidens aristosa*, is desirable. The presence of *Lonicera japonica* may be a cause

Table 1. Status of Planting Pods–1999. cell, species, aerial extent (ft^2), percent cover, rating

Cell	Species	Aerial Extent (ft^2)	Percent Cover	Qualitative Rating
1-A	*Eleocharis erythropoda*	150	75	very good and spreading
1-B	*Scirpus americanus*	324	90	very good and spreading
1-C	*Sagittaria latifolia*	100	50	fair and spreading
1-D	*Scirpus validus*	88	90	good
2-A	*Sparganium eurycarpum*	270	80	very good and spreading
2-B	*Iris shrevii*	72	50	fair
2-C	*Scirpus atrovirens*	64	75	fair
2-D	*Sagittaria latifolia*	80	35	fair
2-E	*Scirpus validus*	160	75	very good and spreading
2-F	*Scirpus americanus*	208	90	very good and spreading
2-G	*Alisma plantago aquatica*	35	30	fair
3-A	*Scirpus atrovirens*	90	70	good
3-B	*Iris shrevii*	132	50	fair
3-C	*Sparganium eurycarpum*	546	75	very good and spreading
3-D	*Scirpus americanus*	256	60	very good and spreading
3-E	*Iris shrevii*	110	40	fair and spreading
3-F	*Sagittaria latifolia*	238	25	poor but spreading
3-G	*Scirpus americanus*	120	30	fair
4-A	*Sparganium eurycarpum*	525	80	very good and spreading
4-B	*Scirpus atrovirens*	60	60	fair
4-C	*Scirpus validus*	660	90	very good and spreading
4-D	*Pontederia cordata*	360	75	very good and spreading
4-E	*Sagittaria latifolia*	1024	75	very good and spreading
4-F	*Pontederia cordata*	351	90	very good and spreading
4-G	*Iris shrevii*	72	50	fair
5-A	*Sparganium eurycarpum*	400	60	good
5-B	*Sagittaria latifolia*	414	20	poor but spreading
6-A	*Sparganium eurycarpum*	56	50	fair
6-B	*Sagittaria latifolia*	1274	75	very good and spreading
6-C	*Pontederia cordata*	322	75	very good and spreading
6-D	*Scirpus atrovirens*	120	80	good
6-E	*Sparganium eurycarpum*	550	90	very good and spreading
6-F	*Scirpus atrovirens*	64	90	fair
6-G	*Pontederia cordata*	336	90	very good and spreading
6-H	*Sagittaria latifolia*	490	70	very good and spreading
	Total	10121	Wt. Mn=72.0	

Table 2. Species composition of Emergent Wetland (Site 1). Freq., Rel. Freq., Dominance (m^2/m^2), Rel. Dom., Importance Value (%).

Species	Freq.	Rel. Freq.	Dom.	Rel. Dom	I.V.
Ludwigia palustris	0.8125	0.1074	0.2344	0.2280	16.77
Sagittaria latifolia	0.6875	0.0909	0.1169	0.1137	10.23
Juncus acuminatus	0.5625	0.0744	0.1156	0.1124	9.34
Panicum rigidulum	0.6250	0.0826	0.0881	0.0857	8.41
Eleocharis obtusa	0.5000	0.0661	0.0669	0.0651	6.56
Juncus interior	0.1875	0.0248	0.0906	0.0881	5.64
Eupatorium serotinum	0.5000	0.0661	0.0375	0.0365	5.13
Lycopus americanus	0.3750	0.0496	0.0219	0.0213	3.55
Polygonum setaceum	0.3750	0.0496	0.0169	0.0164	3.30
Ludwigia alternifolia	0.3125	0.0413	0.0213	0.0207	3.10
Scirpus atrovirens	0.1250	0.0165	0.0406	0.0395	2.80
Pontederia cordata	0.1250	0.0165	0.0375	0.0365	2.65
Phyla lanceolata	0.2500	0.0331	0.0094	0.0091	2.11
Echinochloa muricata	0.1875	0.0248	0.0150	0,0146	1.97
Acalypha rhomboidea	0.1875	0.0248	0.0094	0.0091	1.70
Carex muskingumensis	0.1250	0.0165	0.0156	0.0152	1.58
Panicum acuminatum	0.1250	0.0165	0.0150	0.0146	1.56
Paspalum laeve	0.1875	0.0248	0.0056	0.0054	1.51
Ammannia coccinea	0.1875	0.0248	0.0019	0.0018	1.33
Scirpus americanus	0.0625	0.0083	0.0187	0.0182	1.32
Polygonum amphibium	0.0625	0.0083	0.0187	0.0182	1.32
Cyperus pseudovegatus	0.1250	0.0165	0.0050	0.0049	1.07
Cyperus strigosus	0.1250	0.0165	0.0025	0.0024	0.95
Ulmus americana	0.1250	0.0165	0.0025	0.0024	0.95
Salix nigra	0.0625	0.0083	0.0094	0.0091	0.87
Verbena hastata	0.0625	0.0083	0.0019	0.0018	0.50
Andropogon virginicus	0.0625	0.0083	0.0019	0.0018	0.50
Fraxinus pennsylvanica	0.0625	0.0083	0.0019	0.0018	0.50
Setaria faberi	0.0625	0.0083	0.0013	0.0013	0.48
Mimulus alatus	0.0625	0.0083	0.0013	0.0013	0.48
Juncus marginatus	0.0625	0.0083	0.0012	0.0013	0.48
Hypericum mutilum	0.0625	0.0083	0.0006	0.0006	0.44
Solidago canadensis	0.0625	0.0083	0.0006	0.0006	0.44
Trifolium pratense	0.0625	0.0083	0.0006	0.0006	0.44
Total	7.5625	1.0002	1.0280	1.0000	99.98

Table 3. Species composition of Wet Meadow (Site 2). Freq., Rel. Freq., Dominance (m^2/m^2), Rel. Dom., Importance Value (%).

Species	Freq.	Rel. Freq.	Dom.	Rel. Dom.	I.V.
Juncus interior	1.000	0.0656	0.2063	0.1598	11.27
Panicum acuminatum	1.000	0.0656	0.1737	0.1345	10.01
Eupatorium serotinum	0.750	0.0492	0.1338	0.1036	7.64
Lespedeza cuneata	0.750	0.0492	0.1063	0.0823	6.57
Pycnanthemum virginianum	0.750	0.0492	0.1063	0.0823	6.57
Lycopus americanus	1.000	0.0656	0.0812	0.0629	6.43
Solidago canadensis	0.750	0.0492	0.0788	0.0610	5.51
Acalypha rhomboidea	0.875	0.0574	0.0513	0.0397	4.85
Fraxinus pennsylvanica	0.875	0.0574	0.0387	0.0300	4.37
Panicum rigidulum	0.500	0.0328	0.0488	0.0378	3.53
Ulmus americana	0.750	0.0492	0.0175	0.0136	3.14
Andropogon virginicus	0.500	0.0328	0.0250	0.0194	2.61
Setaria faberi	0.500	0.0328	0.0162	0.0125	2.26
Hypericum mutilum	0.500	0.0328	0.0138	0.0107	2.18
Ludwigia alternifolia	0.375	0.0246	0.0162	0.0125	1.85
Vernonia missurica	0.250	0.0164	0.0238	0.0184	1.74
Carex muskingumensis	0.375	0.0246	0.0125	0.0097	1.71
Carex annectans	0.375	0.0246	0.0100	0.0077	1.62
Helenium autumnale	0.375	0.0246	0.0088	0.0068	1.57
Verbena hastata	0.250	0.0164	0.0162	0.0125	1.45
Panicum scoparium	0.250	0.0164	0.0162	0.0125	1.45
Polygonum setaceum	0.250	0.0164	0.0088	0.0068	1.16
Acer rubrum	0.250	0.0164	0.0063	0.0049	1.07
Echinochloa muricata	0.125	0.0082	0.0150	0.0116	0.99
Trifolium pratense	0.250	0.0164	0.0037	0.0029	0.97
Scirpus atrovirens	0.125	0.0082	0.0125	0.0097	0.89
Crateagus phaenopyrum	0.125	0.0082	0.0050	0.0039	0.60
Rubus flagellaris	0.125	0.0082	0.0050	0.0039	0.60
Asclepias incarnata	0.125	0.0082	0.0050	0.0039	0.60
Rubus allegheniensis	0.125	0.0082	0.0050	0.0039	0.60
Nyssa sylvatica	0.125	0.0082	0.0037	0.0029	0.56
Erechtites hieracifolium	0.125	0.0082	0.0037	0.0029	0.56
Aster pilosus	0.125	0.0082	0.0037	0.0029	0.56
Betula nigra	0.125	0.0082	0.0037	0.0029	0.56
Eupatorium perfoliatum	0.125	0.0082	0.0025	0.0019	0.50
Mimulus alatus	0.125	0.0082	0.0025	0.0019	0.50
Desmodium paniculatum	0.125	0.0082	0.0025	0.0019	0.50
Phyllanthus caroliniensis	0.125	0.0082	0.0012	0.0009	0.46
Total	15.25	1.0004	1.2912	0.9999	100.01

for concern. In the shrubland, 39.1% of the species present are non-native or weedy. The annuals, *Bidens aristosa* and *Erechtites hieracifolia* and the tree, *Catalpa speciosa* are desirable species. Five of the weedy species present are cause for concern: *Festuca pratensis, Eleagnus angustifolia, Lespedeza cuneata, Lonicera japonica,* and *Solidago canadensis* (Append. 1).

Several of the plant communities present at this site are of high natural quality, which is unusual for a site taken out of agriculture only twenty years ago. Two areas support populations of the State Endangered plant, *Eryngium prostratum.*

The emergent wetland has a Floristic Quality Index of 25.9 (29.8, including planted species) and a mean C of 3.5 (3.8, planted). These values indicate that the site is of good natural quality and may be an environmental asset. Conservative species present include *Pluchea camphorata* (FQI=8), *Polygonum setaceum* (FQI=7), and *Eryngium prostratum* (FQI=5, State Endangered). Within this community, eleven patches of *E. prostratum*, averaging 0.2 m^2 , were located. The wet meadow (oak-hickory wetland) has a Floristic Quality Index of 22.4 (25.7, including planted species) and a mean C of 3.0 (3.3, planted), again indicating good natural quality. The conservative species present are *Panicum scoparium* (FQI=9), *Pluchea camphorata* (FQI=8), and *Polygonum setaceum* (FQI=7). The shrub scrub wetland has a Floristic Quality Index of 12.0 and a mean C of 2.8. The nonwet shrubland's FQI is 15.3 (mean C=2.4). These values indicate fair natural quality for both communities. The ditch along the southeast edge of the site has an FQI value of 21.7 and a mean C of 4.0, indicating good natural quality for this community. Conservative species present are *Eryngium prostratum* (FQI=5, State Endangered), *Pluchea camphorata* (FQI=8), and *Rhexia virginica* (FQI=10). Twelve patches of *E. prostratum*, averaging 0.2 m^2 , were located along 80 m (264 ft) of ditch, in the vicinity of the weir. The forested wetlands in the southern part of the site have a Floristic Quality Index of 19.5 and a mean C of 2.9, indicating fairly good natural quality. The conservative species present are *Quercus bicolor* (FQI=7), and *Polygonum setaceum* (FQI=7) (Taft et al., 1997).

C. Cover Type Report

This 6.1 ha (20 acre) site consisted of abandoned agricultural fields or pasture with scattered forest remnants when the cover type report was prepared by Morris et al. in 1994. Since the fields are rapidly succeeding to forest, and a 0.94 ha (3.1 acre) area was cleared and excavated in 1996, significant change has occurred at the site. In general, areas previously described as wet meadow and hayfield/pasture are now shrubland and wet shrubland (young forest, 10 yrs.). Some small, isolated patches of wet meadow remain, however. Areas in the eastern portion of the site, previously described as shrubland and wet shrubland, are now 15 yr. old, sapling stage forest (still classified as wet shrubland). Berm construction has resulted in wetter conditions in this area. The forested areas remain unchanged. (For this report, wooded pond has been lumped with floodplain forest.) Clearing and excavation have resulted in a 0.49 ha (1.2 acre) emergent wetland, surrounded by a 0.77 ha (1.9 acre) wet meadow, in the central portion of the site. The emergent wetland is wet enough to resist woody encroachment. The wet meadow will soon begin forest succession. A ditch and adjacent grass strip have been constructed adjacent to the berm and weir at the southeast edge of the site.

Shrubland – This community is located in the western and north-central parts of the site. *Acer rubrum* dominates the sapling layer, while *Solidago canadensis, Festuca pratensis,* and *Vernonia missurica* dominate the understory. Trees appear to be about ten years old.

Wet Shrubland – This community is located in the eastern portion of the site. *Acer rubrum* and *Fraxinus pennsylvanica* dominate the sapling and shrub layers. Due to heavy shade, the understory is sparse. Trees appear to be about fifteen years old.

Wet Meadow – This community is now reduced to small, isolated patches scattered throughout the site, and will eventually succeed to forest. The herb layer is dominated by *Echinochloa muricata, Festuca pratensis, Lysimachia nummularia,* and *Panicum rigidulum.*

Floodplain Forest – Several areas in the southern portion of the site support floodplain forest. The majority of the trees are 40 to 60 years old, with scattered individuals aged about 90 years. *Quercus palustris, Fraxinus pennsylvanica,* and *Betula nigra* dominate the overstory, while *Acer rubrum* and *Fraxinus pennsylvanica* dominate the sapling and shrub layers. The understory is dominated by *Elymus virginicus, Festuca pratensis* and *Impatiens capensis.*

Emergent Wetland – In the central portion of the site, within an excavated area, an emergent wetland has become established. The dominant species are *Juncus acuminatus, Sagittaria latifolia, Ludwigia palustris, Panicum rigidulum,* and *Eleocharis obtusa.* This community is of good natural quality and harbors a population of the State Endangered *Eryngium prostratum.*

Wet Meadow (oak-hickory wetland) – Within the excavated area, adjacent to the emergent wetland, a wet meadow has become established. The dominant species are *Juncus interior, Panicum acuminatum, Eupatorium serotinum, Lespedeza cuneata, Pycnanthemum virginianum,* and *Lycopus americanus.* The site is of good natural quality. Seedling and shrub stage trees are common and this area will succeed to forest without management.

Ditch – This community has been recently created (1996) at the southeast border of the site. We mention this somewhat artificial community here because it has good natural quality and harbors several very uncommon species, including *Rhexia virginica* (FQI=10) and the State Endangered *Eryngium prostratum.* The dominant species are *Ludwigia palustris* and *Lycopus americanus.*

Grass Strip – A 14 m (45 ft) wide grass strip was established on disturbed land adjacent to the ditch in the southeast part of the site. *Andropogon gerardii* and *Agrostis alba* are the dominant species (Table 4).

Table 4. Plant Communities Present

A. Emergent Wetland

Understory – dominant - *Ludwigia palustris, Sagittaria latifolia, Juncus acuminatus, Panicum rigidulum, Eleocharis obtusa*

Understory - occasional – *Juncus interior, Eupatorium serotinum, Lycopus americanus, Polygonum setaceum, Ludwigia alternifolia, Eryngium prostratum*

B. Wet Meadow (oak-hickory wetland)

Understory – dominant – *Juncus interior, Panicum acuminatum, Eupatorium serotinum, Lespedeza cuneata, Pycnanthemum virginianum, Lycopus americanus*

Understory – occasional – *Solidago canadensis, Acalypha rhomboidea, Fraxinus pennsylvanica, Panicum rigidulum, Andropogon virginicus*

C. Floodplain Forest

Overstory- dominant – *Quercus palustris, Betula nigra, Fraxinus pennsylvanica*
Sapling/Shrub – dominant – *Fraxinus pennsylvanica, Acer rubrum*
Understory – dominant – *Elymus virginicus, Festuca pratensis, Impatiens capensis*

Overstory – occasional – *Acer rubrum, Ulmus americana, Gleditsia triacanthos*
Sapling/Shrub–occasional– *Quercus palustris, Acer negundo, Symphoricarpos orbiculatus*
Understory – occasional – *Cinna arundinacea, Glyceria striata, Lysimachia nummularia*

D. Wet Shrubland

Sapling – dominant – *Acer rubrum, Fraxinus pennsylvanica*
Shrub – dominant – *Acer rubrum, Fraxinus pennsylvanica*

Sapling – occasional – *Betula nigra, Ulmus americana, Diospyros virginiana,*
Shrub – occasional – *Ulmus americana, Rubus occidentalis, Rosa multiflora*
Understory – occasional – *Festuca pratensis, Lysimachia nummularia, Lonicera japonica*

E. Shrubland

Sapling – dominant – *Acer rubrum*
Understory – dominant – *Solidago canadensis, Festuca pratensis, Vernonia missurica*

Sapling – occasional – *Fraxinus pennsylvanica, Gleditsia triacanthos, Acer negundo*
Shrub – occasional – *Rosa multiflora, Rubus allegheniensis, Eleagnus angustifolia*
Understory – occasional – *Apocynum cannabinum, Euthamia graminifolia, Cirsium discolor*

F. Ditch

Understory – dominant – *Ludwigia palustris, Lycopus americanus*

Understory–occasional– *Lobelia cardinalis, Eryngium prostratum, Leersia oryzoides*

Faunal Surveys

Amphibians and Reptiles

Amphibians:
1. Blanchard's Cricket Frog (*Acris crepitans blanchardi*)
2. Gray Treefrog complex (*Hyla versicolor-chrysoscelis*)
3. Spring Peeper (*Pseudacris crucifer*)
4. Western Chorus Frog (*Pseudacris triseriata*)
5. Southern Leopard Frog (*Rana sphenocephala*)

Species Observations

Blanchard's Cricket Frog
A small chorus of cricket frogs was heard calling from the emergent wetland during the 12 May visit. Two adults were observed in this wetland. One cricket frog was heard on the subsequent visit. These observations were made during the day, efforts will be made on future visits to conduct nighttime calling anuran surveys. Six cricket frogs were also observed in the ditch adjacent to the property. Evidence of reproduction or recruitment was not observed, but it is likely that both occur at the site.

Gray Treefrog Complex
Two gray treefrog adults were heard calling in trees during the 25 May visit. A metamorph was encountered on the same visit, providing evidence of reproduction and recruitment of this species at the compensation site.

Spring Peeper
Spring peeper tadpoles were found in ephemeral pools along the south edge of the property on the 12 May visit providing evidence of reproduction. Based on the hydroperiod of this site, it is likely that recruitment also occurs.

Chorus Frog
Chorus frog tadpoles were found in ephemeral pools along the south edge of the property on the 12 May visit. Seven metamorphs were observed on 25 May providing evidence of reproduction and recruitment.

Southern Leopard Frog
Numerous tadpoles were observed in almost every wetland at the compensation site on the 12 May visit providing evidence of reproduction. Fifty to one hundred metamorphs were observed on the subsequent visit providing evidence of recruitment.

Thus, evidence of recruitment was apparent for all the species listed above except for Blanchard's cricket frog. The compensation site is potential habitat or dispersal corridor for a large number (approximately 30, including the species already noted) of amphibians and reptiles. It is especially suitable as breeding habitat for pond-breeding amphibians that require fishless wetlands. It must be noted, however, that two species of fish were found in the emergent wetland (*Gambusia affinis* and one *Lepomis* sp.). The latter species is known to prey on all stages of pond-breeding amphibians and can completely eliminate pond-breeding amphibians from wetlands. Future surveys are planned for late winter/early spring to assess the adult abundance of early spring breeding amphibians such as spring peepers, chorus frogs and southern leopard frogs.

Summary and Recommendations

This site has excellent potential and is developing nicely. One of its best attributes is that the wetland creation acreage occurs within a larger, predominantly upland, site containing preexisting wetlands. The uplands provide buffer, as well as additional wildlife habitat. The preexisiting wetland provide a source for colonizing the created wetlands, All but the wettest areas at this site will rapidly succeed to forest of fairly good natural quality without any management at all. In addition, the facts that the site was a complex matrix of wetlands and nonwetlands even as an old field, and that much of the site is wet in the spring but quite dry in the late summer and fall give evidence that parts of the site may have originally been flatwoods. Any areas excavated, both the created wetland and the ditch, have produced a number of very uncommon and conservative herbaceous species. This indicates the presence of a viable wetland soil seedbank. Several problems exist at this site, however.

The excavated area is occupied by a 0.49 ha (1.2 acre) emergent wetland and a 0.77 ha (1.9 acre) wet meadow. These areas were accurately measured. Due to berm construction, the wet shrubland in the eastern portion of the site has expanded by approximately 1.67 ha (4.1 acres). During the 2000 monitoring season, the aerial extent of this community will be more accurately determined. We estimate that 2.91 ha (7.2 acres) of wetland have been created at this site. This is somewhat less than the 3.7 ha (9.15 acres) required.

Emergent Wetland – An emergent wetland of good quality has established itself in a 0.49 ha (1.2 acre) excavated area. Planted herbaceous species are doing very well, so far. A number of uncommon and conservative species have appeared. The State Endangered *Eryngium prostratum* is a species of mudflats and pond edges, and may decline over time as other species increase and produce shade. On the other hand, greatly fluctuating water levels at this site may prove to maintain bare areas suitable for this species. Several noxious weeds are present and they should be treated with herbicide immediately: *Phragmites communis* and *Typha angustifolia*. The *Solidago canadensis* present here should not be a problem since wet conditions should retard its development. The one individual of *Lythrum salicaria*, apparently brought in with nursery stock, has been removed. Care should be taken, however, to quickly eradicate any other individuals of this species that are located. The biggest problem with the emergent wetland is that the cypress-gum wetland has been superimposed directly over it. These two communities are not compatible. A mature stand of cypress and gum will shade out and eliminate many of the planted herbaceous species. The developing stand of woody vegetation will definitely eradicate the State Endangered *Eryngium prostratum*. The cypress-gum community species planted should be removed immediately.

Wet Meadow (oak-hickory wetland) – A wet meadow of good natural quality has established itself on 0.77 ha (1.9 acres) of cleared and excavated land adjacent to the emergent wetland. Several very uncommon and conservative species have appeared in this area. A number of live, planted tree and shrub species were observed. We estimate that the planting density is lower than specified, however. The site also harbors abundant seedling and shrub stage tree regeneration and will likely quickly succeed to forest without augmentation. This site supports several noxious weeds whose presence should be addressed. As with the emergent wetland, *Phragmites communis* and *Typha angustifolia* should be treated with herbicide at the first opportunity. *Lespedeza cuneata* and *Solidago canadensis* are very aggressive and persistent in herbaceous dominated communities. At a small site such as this, herbicide treatment is a viable option (see following section). However, since this site shows such a strong tendency to succeed to forest, allowing that alternative to take place might be the best solution. Neither *L. cuneata* nor *S. canadensis*

are at all tolerant of shade and they will greatly decrease in abundance as woody regeneration produces a closed canopy by about fifteen years. On the other hand, as this community shifts from herbaceous dominated to woody regeneration, the floristic quality will undoubtedly decrease until the forest reaches a certain level of maturity at around year 35. In order to have a chance at maintaining the current level of floristic quality, this site will have to be subjected to a regimen of herbicide, mowing and burning, according to the following schedule.

Sericea Lespedeza Control:

Sericea lespedeza, *Lespedeza cuneata*, has a negative impact on food and cover for wildlife and on biological diversity (Vermeire *et al.*, no date). Once established, sericea lespedeza will reduce or eliminate competing vegetation. In addition to competing for light, water, and nutrients, *Lespedeza cuneata* produces allelopathic chemicals that inhibit seed germination and growth of other plants (Vermeire *et al.*, no date). Grazing, burning, and applying 2,4-D do not control sericea lespedeza. Fire probably increases seed germination and promotes establishment of new plants. Probably the best way to control sericea lespedeza involves a combination of multiple mowing and application of the herbicides Ally and Remedy. Multiple mowing reduces the vigor of plants. The plants should be mowed whenever they reach 12-18 inches in height. Vermeire *et al.* (no date) claim excellent results from application of Remedy in June and July (at 1 pint/acre) and Ally in September (0.3 oz/acre). The Kansas Forage Task Force (no date) recommend Escort (0.5 oz/acre) or Ally. Follow-up treatments will be necessary since sericea lespedeza produces abundant seed, and a seed bank undoubtedly exists in the soil. Burning in the spring before mowing and application of herbicide will encourage seed germination and depletion of the seed bank.

Wet Shrubland – Forest regeneration has been proceeding rapidly across this entire site. A small amount (1 acre) of wet shrubland (young forest) existed in the eastern part of the site prior to hydrologic alteration. Berm construction has resulted in the expansion of this community by about 1.67 ha (4.1 acres). This forest regeneration is currently about fifteen years old. The canopy has now completely closed and, consequently, understory vegetation is very sparse. The floristic quality of this site is rated as fair (FQI=12.0) and is not likely to improve in the next ten years. This is a natural and commonly occurring phenomenon, and is not in any way undesirable. Diversity is high during the herbaceous and shrub stage (1 to 10 yrs.), decreases considerably during the sapling stage (10 to 25 yrs.) due to competition and shading, and increases again after that. The site supports a healthy, sapling stage forest, and little can be done to increase floristic quality or speed succession. One noxious weed is present that may be of concern: *Lonicera japonica*. Spot herbicide application for this species may be advisable, although repeated reintroduction by birds is unavoidable.

Ditch - This normally unnoteworthy feature is mentioned here because its construction has resulted in the establishment of several uncommon and conservative species, probably present in the soil seedbank. Due to the presence of the State Endangered *Eryngium prostratum* and the uncommon species, *Rhexia virginica*, we recommend that the area surrounding this feature, at the southeast edge of the property, be maintained as free of woody vegetation.

Appendix 1: Wetland Determinations

Species Lists and Site Photographs

ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 1 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Emergent Wetland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern part of the central portion of the site (adjacent to Site 2)

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Ludwigia palustris*	herb	OBL
2. *Sagittaria latifolia*	herb	OBL
3. *Juncus acuminatus*	herb	OBL
4. *Panicum rigidulum*	herb	FACW
5. *Eleocharis obtusa*	herb	OBL

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 5Y 7/1
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Emergent Wetland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4
Location: eastern part of the central portion of the site (adjacent to Site 2)

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: greater than 1.2 m (48 inches)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: wetland drainage pattern, bare soil areas, the site is an excavated depression.

Wetland hydrology: Yes: X No:
Rationale: The eveidence cited above indicates that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)
Rick Larimore (vegetation and hydrology)
Dennis Keene (soils and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 1 (page 3 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Emergent Wetland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern part of the central portion of the site (adjacent to Site 2)

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
**Acalypha rhomboidea*	three seeded Mercury	herb	FACU	0
Acer rubrum	red maple	seedl	FAC	5
Alisma plantago aquatica	water plantain	herb	OBL	2
***Ammannia coccinea*	ammannia	herb	OBL	5
**Andropogon virginicus*	broomsedge	herb	FAC-	1
Asclepias incarnata	swamp milkweed	herb	OBL	4
***Bidens connata*	beggar's ticks	herb	OBL	2
Boehmeria cylindrica	false nettle	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Carex lupulina	hop sedge	herb	OBL	5
Carex muskingumensis	sedge	herb	OBL	6
Cephalanthus occidentalis	button bush	seedl	OBL	4
Cyperus pseudovegatus	flat sedge	herb	FACW	5
**Cyperus strigosus*	straw colored flat sedge	herb	FACW	0
**Echinochloa muricata*	barnyard grass	herb	OBL	0
Eleocharis erythropoda	spike rush	herb	(planted)	3
***Eleocharis obtusa*	spike rush	herb	OBL	2
***Erechtites hieracifolia*	fireweed	herb	FACU	2
Eryngium prostratum	eryngo	herb	OBL	5
Eupatorium perfoliatum	boneset	herb	FACW+	4
**Eupatorium serotinum*	late flowering thoroughwort	herb	FAC+	1
Euthamia graminifolia	grass leaf goldenrod	herb	FACW-	3
Fraxinus pennsylvanica	green ash	seedl	FACW	2
Hypericum mutilum	dwarf St. John's wort	herb	FACW	5
Iris shrevei	blue flag iris	herb	(planted)	5
Itea virginica	sweet spires	shrub	(planted)	10
Juncus acuminatus	knotty leaf rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Juncus marginatus	grass leaved rush	herb	FACW	5
Leersia oryzoides	rice cutgrass	herb	OBL	3
Ludwigia alternifolia	seedbox	herb	OBL	5
Ludwigia palustris	marsh purslane	herb	OBL	4
Ludwigia polycarpa	many fruited seedbox	herb	OBL	5

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(continued on following page)

ROUTINE ON-SITE WETLAND DETERMINATION
Site 1 (page 4 of 4)

Field Investigators: Plocher, Larimore , Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Emergent Wetland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern part of the central portion of the site (adjacent to Site 2)

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
Lycopus americanus	horehound	herb	OBL	3
**Lythrum salicaria*	purple loosestrife	herb	(removed)	
Mimulus altatus	winged monkey flower	herb	OBL	6
Panicum acuminatum	panic grass	herb	FAC	2
Panicum rigidulum	munro grass	herb	FACW	6
Paspalum laeve	smooth bead grass	herb	FACW-	2
**Phragmites communis*	giant reed	herb	FACW+	1
**Phyla lanceolata*	fog fruit	herb	OBL	1
***Phyllanthus caroliniensis*	Carolina leaf flower	herb	FAC	5
Pluchea camphorata	camphor weed	herb	FACW	8
Polygonum amphibium	water smartweed	herb	OBL	3
**Polygonum cespitosum*	black bindweed	herb	UPL	
Polygonum hydropiperoides	water pepper	herb	OBL	4
***Polygonum pensylvanicum*	giant smartweed	herb	FACW+	1
Polygonum setaceum	bristly smartweed	herb	OBL	7
Pontederiacordata	pickeralweed	herb	(planted)	8
Populus deltoides	cottonwood	seedl	FAC+	2
Pycnanthemum virginianum	mountain mint	herb	FACW+	5
Sagittaria latifolia	arrow head	herb	OBL	4
Salix amygdaloides	peach leaf willow	shrub	FACW	4
Salix nigra	black willow	shrub/seedl	OBL	3
Scirpus americanus	American bulrush	herb	(planted)	3
Scirpus atrovirens	green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
Scirpus validus	great bulrush	herb	(planted)	4
**Setaria faberi*	giant foxtail	herb	FACU+	
Sium suave	water parsnip	herb	OBL	5
**Solidago canadensis*	Canada goldenrod	herb	FACU	1
Sparganium eurycarpum	burreed	herb	(planted)	5
Taxodium distichum	bald cypress	shrub	(planted)	7
**Trifolium pratense*	red clover	herb	FACU+	
**Typha angustifolia*	narrow leaf cattail	herb	OBL	
Ulmus americana	American elm	seedl	FACW-	5
Verbena hastata	blue vervain	herb	FACW+	3

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

*=non-native or weedy, **=annual, but desirable
FQI=R/√N=190/√54=25.9, mean C=R/N=190/54= 3.5
FQI (including planted species) = 235/√62= 29.8, mean C=R/N=235/62=3.8

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 1 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.:(7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow (oak, - hickory wetland)
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: central portion of site (adjacent to Site 1)

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	**Stratum**	**Indicator Status**
1. *Juncus interior*	herb	FAC+
2. *Panicum acuminatum*	herb	FAC
3. *Eupatorium serotinum*	herb	FAC+
4. *Lespedeza cuneata*	herb	NI
5. *Pycnanthemum virginianum*	herb	FACW+
6. *Lycopus americanus*	herb	OBL

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 5Y 7/1 and 2.5Y 6/2
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 2 (page 2 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow (oak- hickory wetland)
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: central portion of the site (adjacent to Site 1)

HYDROLOGY

Inundated: Yes: No: X Depth of standing water: NA
Depth to saturated soil: Greater than 1.2 m (48 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and occasional overbank flow. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: The site is level to depressional on the landscape.
Wetland hydrology: Yes: X No:
Rationale: Field evidence indicates that this site is inundated or saturated for a sufficient portion of the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are present. Therefore the site is a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 3 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow (oak – hickory wetland)
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: central portion of the site (adjacent to Site 1)

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
**Acalypha rhomboidea*	three seeded Mercury	herb	FACU	0
Acer rubrum	red maple	shrub/seedl	FAC	5
**Ambrosia artemisiifolia*	common ragweed	herb	FACU	0
**Andropogon virginicus*	broomsedge	herb	FAC-	1
Asclepias incarnata	swamp milkweed	herb	OBL	4
**Aster pilosus*	hairy aster	herb	FACU+	0
Betula nigra	river birch	shrub/seedl	FACW	4
***Bidens aristosa*	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Campsis radicans	trumpet creeper	herb	FAC	2
Carex annectans	sedge	herb	FACW	3
Carex muskingumensis	sedge	herb	OBL	6
Carpinus caroliniana	iron wood	shrub	(planted)	6
Carya illinoensis	pecan	shrub	(planted)	6
Cephalanthus occidentalis	button bush	seedl	OBL	4
Cornus racemosa	grey dogwood	shrub	(planted)	2
Crateagus phaenopyrum	Washington thorn	shrub	(planted)	5
**Cyperus strigosus*	straw colored flat sedge	herb	FACW	0
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Diospyros virginiana	persimmon	seedl	FAC	2
**Echinochloa muricata*	barnyard grass	herb	OBL	0
***Eleocharis obtusa*	spikerush	herb	OBL	2
***Erechtites hieracifolia*	fireweed	herb	FACU	2
Eupatorium perfoliatum	boneset	herb	FACW+	4
**Eupatorium serotinum*	late flowering thoroughwort	herb	FAC+	1
Euthamia graminifolia	grass leaf goldenrod	herb	FACW-	3
Fraxinus pennsylvanica	green ash	shrub/seedl	FACW	2
Helenium autmnale	sneezeweed	herb	FACW+	3
Hypericum mutilum	dwarf St. John's wort	herb	FACW	5
**Ipomea* sp.	morning glory	herb	-------	–
Juncus effusus	common rush	herb	OBL	4
Juncus interior	inland rush	herb	FAC+	3
Leersia oryzoides	rice cutgrass	herb	OBL	3
**Lespedeza cuneata*	Chinese bush clover	herb	NI	
Liquidambar styraciflua	sweet gum	shrub	(planted)	6

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(continued on following page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 2 (page 4 of 4)

Field Investigators: Plocher, Larimore , Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow (oak – hickory wetland)
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: central portion of the site (adjacent to Site1)

SPECIES LIST (continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
Ludwigia alternifolia	seedbox	herb	OBL	5
Lycopus americanus	horehound	herb	OBL	3
Mimulus altatus	winged monkey flower	herb	OBL	6
Nyssa sylvatica	black gum	shrub	(planted)	7
Panicum acuminatum	panic grass	herb	FAC	2
Panicum clandestinum	deer tongue grass	herb	FACW	4
**Panicum dichotomiflorum*	fall panicum	herb	FACW-	0
Panicum rigidulum	munro grass	herb	FACW	6
Panicum scoparium	panic grass	herb	FACW	9
Paspalum laeve	smooth bead grass	herb	FACW-	2
**Phragmites communis*	giant reed	herb	FACW+	1
***Phyllanthus caroliniensis*	Carolina leaf flower	herb	FAC	5
Pluchea camphorata	camphor weed	herb	FACW	8
**Polygonum cespitosum*	black bindweed	herb	UPL	
***Polygonum pensylvanicum*	giant smartweed	herb	FACW+	1
Polygonum setaceum	bristly smartweed	herb	OBL	7
Platanus occidentalis	sycamore	seedl	FACW	3
**Prunella vulgaris elongata*	self heal	herb	FAC	1
Pycnanthemum virginianum	mountain mint	herb	FACW+	5
Quercus palustris	pin oak	shrub	(planted)	4
Rubus allegheniensis	black berry	shrub	FACU+	2
Rubus flagellaris	dewberry	herb	FACU-	2
Rudbeckia hirta	black eyed Susan	herb	FACU	2
Scirpus atrovirens	green bulrush	herb	OBL	4
Scirpus cyperinus	wool grass	herb	OBL	5
**Setaria faberi*	giant foxtail	herb	FACU+	
**Setaria glauca*	yellow foxtail	herb	FAC	
**Solanum carolinense*	horse nettle	herb	FACU-	0
**Solidago canadensis*	Canada goldenrod	herb	FACU	1
**Trifolium pratense*	red clover	herb	FACU+	
**Typha angustifolia*	narrow leaf cattail	herb	OBL	
Ulmus americana	American elm	seedl	FACW-	5
Verbena hastata	blue vervain	herb	FACW+	3
Vernonia missurica	Missouri ironweed	herb	FAC+	5

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

*=non-native or weedy, **=annual, but desirable
FQI=R/√N=166/√55=22.4, mean C=R/N=166/55= 3.0
FQI (including planted species)= 202/√62= 25.7, mean C= 202/62= 3.3

ROUTINE ON-SITE WETLAND DETERMINATION
Site 3 (page 1 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NE/4 SW/4

Location: western portion of the site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	**Stratum**	**Indicator Status**
1. *Acer rubrum*	sapling	FAC
2. *Solidago canadensis*	herb	FACU
3. *Festuca pratensis*	herb	FACU-
4. *Vernonia missurica*	herb	FAC+

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 50%

Hydrophytic vegetation: Yes: No: X
Rationale: Not more than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Banlic silt loam
On Saline County hydric soils list? Yes: No: X
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: No: X
Matrix color: 10YR 5/3
Other indicators: None

Hydric soils: Yes: No: X
Rationale: Banlic silt loam is a somewhat poorly drained soil that lacks hydric soil characteristics.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 3 (page 2 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NE/4 SW/4

Location: western portion of the site

HYDROLOGY
Inundated? Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 1.2 m (48 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: none

Wetland hydrology: Yes: No: X
Rationale: Field evidence suggests that this site is not saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland? Yes: No: X
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all absent. Therefore the site is not a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 3 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NE/4 SW/4
Location: western portion of the site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
**Acalypha rhomboidea*	three seeded Mercury	herb	FACU	0
Acer rubrum	red maple	sapling, shrub, seedl	FAC	5
**Acer negundo*	box elder	sapling, shrub, seedl	FACW-	1
Andropogon gerardii	big bluestem	herb	FAC-	5
**Andropogon virginicus*	broomsedge	herb	FAC-	1
Apocynum cannabinum	dogbane	herb	FAC	2
Asclepias hirtella	green milkweed	herb	UPL	6
**Aster pilosus*	hairy aster	herb	FACU+	0
***Bidens aristosa*	beggar's ticks	herb	FACW	1
Campsis radicans	trumpet creeper	herb	FAC	2
**Catalpa speciosa*	catalpa	sapling	FACU	0
**Cirsium discolor*	field thistle	herb	UPL	2
Clematis virginiana	virgin's bower	herb	FAC	3
Crateagus mollis	red haw	sapling, shrub	FACW-	2
Desmodium paniculatum	panicled tick trefoil	herb	FACU	2
Diospyros virginiana	persimmon	sapling, shrub, seedl	FAC	2
**Eleagnus angustifolia*	Russian olive	sapling, shrub	FACU-	
***Erechtites hieracifolia*	fireweed	herb	FACU	2
**Eupatorium serotinum*	late flowering thoroughwort	herb	FAC+	1
Euthamia graminifolia	grass leaved goldenrod	herb	FACW-	3
**Festuca pratensis*	English bluegrass	herb	FACU-	
Fraxinus pennsylvanica	green ash	sapling, shrub, seedl	FACW	2
Gleditsia triacanthos	honey locust	sapling, shrub, seedl	FAC	2

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(Species list continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 3 (page 4 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NE/4 SW/4
Location: western portion of the site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
**Lespedeza cuneata*	Chinese bush clover	herb	NI	
**Lonicera japonica*	Japanese honeysuckle	herb	FACU	
Lycopus virginicus	bugle weed	herb	OBL	5
Panicum acuminatum	panic grass	herb	FAC	2
Panicum rigidulum	Munro grass	herb	FACW	6
Parthenocissus quinquefolia	Virginia creeper	herb	FAC-	2
**Poa pratensis*	Kentucky bluegrass	herb	FAC-	
Pycnanthemum virginianum	mountain mint	herb	FACW+	5
Quercus palustris	pin oak	herb	FACW	4
Rhus coppalina	winged sumac	herb	UPL	2
**Rosa multiflora*	multiflora rose	shrub	FACU	
Rubus allegheniensis	common blackberry	shrub	FACU+	2
Rubus occidentalis	black raspberry	shrub	UPL	2
Rudbeckia hirta	black eyed Susan	sapl/shrub	FACU	2
Scirpus atrovirens	green bulrush	herb	OBL	4
**Solanum carolinense*	horse nettle	herb	FACU-	0
**Solidago canadensis*	Canada goldenrod	herb	FACU	1
**Symphoricarpos orbiculatus*	coralberry	herb	FACU	1
Teucrium canadense	germander	herb	FACW-	3
**Toxicodendron radicans*	poison ivy	herb	FAC+	1
**Tridens flavus*	purple top	herb	UPL	1
Ulmus americana	American elm	sapling, shrub, seedl	FACW-	5
Vernonia missurica	Missouri ironweed	herb	FAC+	5

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

*=non-native or weedy, **=annual, but desirable
FQI=R/√N=97/√40=15.3, mean C=R/N=97/40=2.4

ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Floodplain Forest
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: various locations in the southern part of the site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Quercus palustris*	tree	FACW
2. *Fraxinus pennsylvanica*	tree	FACW
3. *Betula nigra*	tree	FACW
4. *Fraxinus pennsylvanica*	sapling/shrub	FACW
5. *Acer rubrum*	sapling/shrub	FAC
6. *Elymus virginicus*	sapling	FACW
7. *Festuca pratensis*	herb	FACU-
8. *Impatiens capensis*	herb	FACW

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 87%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 10YR 6/2
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 4 (page 2 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Floodplain Forest
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: various locations in the southern part of the site

HYDROLOGY
Inundated? Yes: No: X Depth of standing water: NA
Depth to saturated soil: greater than 1.2 m (48 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation, runoff from the surrounding uplands and ditch overflow. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: low landscape position, wetland drainage patterns, water stained leaves

Wetland hydrology: Yes: X No:
Rationale: Evidence cited above indicates that this site is flooded or saturated for a sufficient period during the growing season to meet the criterion of wetland hydrology.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI.

Determined by: Allen Plocher (vegetation and hydrology)
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ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 3 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Floodplain Forest
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: various locations in the southern portion of the site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
Acalypha rhomboidea	three seeded Mercury	herb	FACU	0
Acer negundo	box elder	tree/sapl	FACW-	1
Acer rubrum	red maple	tree/sapl/shrub/seedl	FAC	5
Aster ericoides	heath aster	herb	FACU-	4
Aster lateriflorus	side flowered aster	herb	FACW-	2
Betula nigra	river birch	tree, sapl, shrub	FACW	4
Bidens connata	beggar's ticks	herb	OBL	2
Boehmeria cylindrica	false nettle	herb	OBL	3
Campsis radicans	trumpet creeper	woody vine, herb	FAC	2
Carex blanda	woodland sedge	herb	FAC	2
Carex lupulina	hop sedge	herb	OBL	5
Carex muskingumensis	sedge	herb	OBL	6
Carex squarrosa	sedge	herb	OBL	5
Carex vulpinoidea	fox sedge	herb	OBL	3
Cephalanthus occidentalis	buttonbush	shrub, herb	OBL	4
Cicuta maculata	water hemlock	herb	OBL	4
Cinna arundinacea	stout wood reed	herb	FACW	5
Cornus obliqua	pale dogwood	shrub	FACW+	4
Diospyros virginiana	persimmon	tree, sapl	FAC	2
Echinochloa muricata	barnyard grass	herb	OBL	0
Elymus virginicus	Virginia wild rye	herb	FACW-	4
Erechtites hieracifolia	fireweed	herb	FACU	2
Eupatorium rugosum	white snakeroot	herb	FACU	2
Festuca pratensis	English bluegrass	herb	FACU-	
Fraxinus pennsylvanica	green ash	tree/sapl/shrub	FACW	2
Galium aparine	annual bedstraw	herb	FACU	0

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

(Species list continued on next page)

ROUTINE ON-SITE WETLAND DETERMINATION

Site 4 (page 4 of 4)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Floodplain Forest
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4
Location: various locations in the southern portion of the site

SPECIES LIST (Continued)

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
Gleditsia triacanthos	honey locust	tree, seedling	FAC	2
Glyceria striata	fowl manna grass	herb	OBL	4
Impatiens capensis	jewelweed	herb	FACW	2
Lonicera japonica	Japanese honeysuckle	woody vine, herb	FACU	
Lycopus virginicus	bugleweed	herb	OBL	5
Lysimachia nummularia	moneywort	herb	FACW+	
Parthenocissus quinquefolia	Virginia creeper	woody vine, herb	FAC-	2
Phyla lanceolata	fog fruit	herb	OBL	1
Phytolacca amrericana	pokeweed	herb	FAC-	1
Polygonum sp.	smartweed	herb	-----	-
Polygonum setaceum	bristly smartweed	herb	OBL	7
Populus deltoides	cottonwood	tree, sapling	FAC+	2
Prunus serotina	black cherry	sapling	FACU	1
Quercus bicolor	swamp white oak	tree, sapling	FACW+	7
Quercus palustris	pin oak	tree, sapling, shrub	FACW	4
Rubus allegheniensis	common blackberry	shrub	FACU+	2
Rubus occidentalis	black raspberry	shrub, herb	UPL	2
Rumex altissimus	pale dock	herb	FACW-	2
Sambucus canadensis	elderberry	shrub, herb	FACW-	2
Scirpus atrovirens	green bulrush	herb	OBL	4
Symphoricarpos orbiculatus	coralberry	shrub, herb	FACU	1
Toxicodendron radicans	poison ivy	woody vine, herb	FAC+	1
Ulmus americana	American elm	tree, sapl, shrub, seedl	FACW-	5
Vitis riparia	riverbank grape	woody vine, herb	FACW-	2

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

FQI=R/√N=132/√46=19.5, mean C=R/N=132/46=2.9

ROUTINE ON-SITE WETLAND DETERMINATION
Site 5 (page 1 of 3)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Ditch
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: southeast edge of site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Lycopus americanus*	herb	OBL
2. *Ludwigia palustris*	herb	OBL

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 100%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 2.5Y 6/2 and 6/1
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Ditch
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: southeast edge of site

HYDROLOGY

Inundated? Yes: X (in places) No: Depth of standing water: 0.05 m (2 in)
Depth to saturated soil: at surface
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and ditchflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: Drift marks and bare areas are present. The site is an excavated drainage ditch.

Wetland hydrology: Yes: X No:
Rationale: Field evidence indicates that this site is inundated or saturated for a sufficient portion of the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: No: X
Rationale: Although hydrophytic vegetation, hydric soils and wetland hydrology are all present, the site is an artificially excavated drainage feature. Therefore the site is not a wetland. The site is not coded by the NWI.

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 5 (page 3 of 3)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Ditch
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: southeast edge of site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
Ammannia coccinea	ammannia	herb	OBL	5
Apocynum cannabinum	dogbane	herb	FAC+	2
Aster ericoides	heath aster	herb	FACU-	4
Boehmeria cylindrica	false nettle	herb	OBL	3
Boltonia asteroides	false aster	herb	FACW	5
Carex muskingumensis	sedge	herb	OBL	6
Cyperus pseudovegatus	flat sedge	herb	FACW	5
Echinochloa muricata	barnyard grass	herb	OBL	0
Eclipta prostrata	yerba de tajo	herb	FACW	2
Eleocharis obtusa	spike rush	herb	OBL	2
Eryngium prostratum	eryngo	herb	OBL	5
Eupatoriumperfoliatum	boneset	herb	FACW+	4
Helenium autumnale	sneezeweed	herb	FACW+	3
Juncus acuminatus	rush	herb	OBL	4
Leersia oryzoides	rice cutgrass	herb	OBL	3
Lobelia cardinalis	cardinal flower	herb	OBL	6
Lobelia siphilitica	blue lobelia	herb	FACW+	4
Ludwigia palustris	marsh purslane	herb	OBL	4
Lycopus americanus	horehound	tree	OBL	3
Lysimachia nummularia	moneywort	herb	FACW+	
Mimulus alatus	monkey flower	herb	OBL	6
Panicum rigidulum	Munro grass	herb	FACW	6
Penthorum sedoides	ditch stonecrop	herb	OBL	2
Phyla lanceolata	fogfruit	herb	OBL	1
Pluchea camphorata	camphor weed	herb	FACW	8
Rhexia virginica	meadow beauty	herb	OBL	10
Sagittaria latifolia	arrowhead	herb	OBL	4
Salix nigra	black willow	shrub/seedl	OBL	3
Scirpus atrovirens	green bulrush	herb	OBL	4
Verbena hastata	blue vervain	herb	FACW+	3

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

FQI=R/√N= 117/√29=21.7, mean C=R/N=117/29=4.0

ROUTINE ON-SITE WETLAND DETERMINATION
Site 6 (page 1 of 2)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4, NE/4 SW/4

Location: various small, isolated areas throughout the site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Echinochloa muricata*	herb	OBL
2. *Festuca pratensis*	herb	FACU-
3. *Panicum rigidulum*	herb	FACW
4. *Lysimachia nummularia*	herb	FACW+

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 75%

Hydrophytic vegetation: Yes: X No:
Rationale: More than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 10YR 6/2
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION
Site 6 (page 2 of 2)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Meadow
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4, NE/4 SW/4

Location: various small, isolated areas throughout the site

HYDROLOGY
Inundated? Yes: No: X Depth of standing water: NA
Depth to saturated soil: 0.6 m (24 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: The site is a depression.

Wetland hydrology: Yes: X No:
Rationale: Field evidence suggests that this site is saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland. The site is not coded by the NWI.

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ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Non-native Grassland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: southeast edge of site (adjacent to Site 5)

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Andropogon gerardii*	herb	FAC-
2. *Agrostis alba*	herb	FACW

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 50%

Hydrophytic vegetation: Yes: X No:
Rationale: Not more than 50% of dominants are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Undet.
On Saline County hydric soils list? Yes: No: Undet.: X
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: No: X
Matrix color: 10YR 5/3
Other indicators: None

Hydric soils: Yes: No: X
Rationale: This soil has been altered by cut and fill activities. However, no evidence of hydric conditions were observed.

ROUTINE ON-SITE WETLAND DETERMINATION

Site 7 (page 2 of 2)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Non-native grassland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: southeast edge of site (adjacent to Site 5)

HYDROLOGY

Inundated? Yes: No: X Depth of standing water: NA
Depth to saturated soil: > 1.2 m (48 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: The site higher in elevation than the adjacent Site 5.

Wetland hydrology: Yes: No: X
Rationale: Field evidence suggests that this site is not saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: No: X
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all absent. Therefore the site is not a wetland. The site is not coded by the NWI.

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ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern portion of the site

Do normal environmental conditions exist at this site? Yes: X No:
Has the vegetation, soil, or hydrology been significantly disturbed? Yes: No: X

VEGETATION

Dominant Plant Species	Stratum	Indicator Status
1. *Acer rubrum*	sapling	FAC
2. *Fraxinus pennsylvanica*	sapling	FACW
3. *Acer rubrum*	shrub	FAC
4. *Fraxinus pennsylvanica*	shrub	FACW

Percent of dominant species that are OBL, FACW, FAC+, or FAC: 100%
Hydrophytic vegetation: Yes: X No:
Rationale: Greater than 50% of the dominant species are OBL, FACW, FAC+, or FAC.

SOILS

Series and phase: Bonnie silt loam
On Saline County hydric soils list? Yes: X No:
Is the soil a histosol? Yes: No: X Histic epipedon present? Yes: No: X
Redox concentrations: Yes: X No: Redox depletions: Yes: X No:
Matrix color: 2.5Y 6/2 and 7/1
Other indicators: This soil is found in a level to depressional area on a floodplain.

Hydric soils: Yes: X No:
Rationale: Bonnie silt loam is a poorly drained soil that meets the requirements of the Natural Resource Conservation Service hydric soil indicator F3, depleted matrix.

ROUTINE ON-SITE WETLAND DETERMINATION

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern portion of the site

HYDROLOGY

Inundated? Yes: No: X Depth of standing water: NA
Depth to saturated soil: greater than 1.2 m (48 in)
Overview of hydrological flow through the system: Primary hydrologic inputs to this site are precipitation and runoff from the surrounding uplands. Evapotranspiration and sheetflow are the major outputs.
Size of watershed: 2.59 km^2 (1 mi^2)
Other field evidence observed: The site is a depression. Wetland drainage patterns and water stained leaves were observed.

Wetland hydrology: Yes: X No:
Rationale: Field evidence suggests that this site is saturated or inundated for a sufficient duration during the growing season to meet the wetland hydrology criterion.

WETLAND DETERMINATION AND RATIONALE:

Is the site a wetland?: Yes: X No:
Rationale: Hydrophytic vegetation, hydric soils and wetland hydrology are all present. Therefore the site is a wetland.
The site is not coded by the NWI.

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ROUTINE ON-SITE WETLAND DETERMINATION

Site 8 (page 3 of 3)

Field Investigators: Plocher, Larimore, Keene **Date:** 19 August 1999
Sect. No.: (7-3, 8-1-1) A, 8-1 B **Project Name:** FAP 331 (IL 13) Wetland Mitigation
State: Illinois **County:** Saline **Applicant:** IDOT District 9
Site Name: Wet Shrubland
Legal Description: T.9S., R.5 E., Sect. 18, NW/4 SE/4

Location: eastern portion of site

SPECIES LIST

Scientific name	Common name	Stratum	Wetland indicator status	FQI*
**Acalypha rhomboidea*	three seeded Mercury	herb	FACU	0
Acer rubrum	red maple	sapling/shrub	FAC	5
Betula nigra	river birch	sapling/shrub	FACW	4
***Bidens aristosa*	beggar's ticks	herb	FACW	1
Boehmeria cylindrica	false nettle	herb	OBL	3
Carex vulpinoidea	fox sedge	herb	OBL	3
Cinna arundinacea	stout woodreed	herb	FACW	5
Diospyros virginiana	persimmon	sapling/shrub	FAC	2
Elymus virginicus	Virginia wild rye	herb	FACW-	4
**Festuca pratensis*	English blue grass	herb	FACU-	
Fraxinus pennsylvanica	green ash	sapling/shrub	FACW	2
Glyceria striata	fowl manna grass	herb	OBL	4
Impatiens capensis	jewel weed	herb	FACW	2
**Lonicera japonica*	Japanese honeysuckle	herb/woody vine	FACU	
**Lysimachia nummularia*	moneywort	herb	FACW+	
Quercus palustris	pin oak	sapling/shrub	FACW	4
**Rosa multiflora*	multiflora rose	shrub	FACU	
Rubus occidentalis	black raspberry	shrub	UPL	2
Rumex altissimus	pale dock	herb	FACW-	2
**Toxicodendron radicans*	poison ivy	herb/woody vine	FAC+	1
Ulmus americana	American elm	sapling/shrub	FACW-	5
Vitis riparia	riverbank grape	herb/woody vine	FACW-	2

*Floristic Quality Index, as developed by J. Taft, D. Ladd, G. Wilhelm and L. Masters (1997)

*=non-native or weedy, **=annual, but desirable

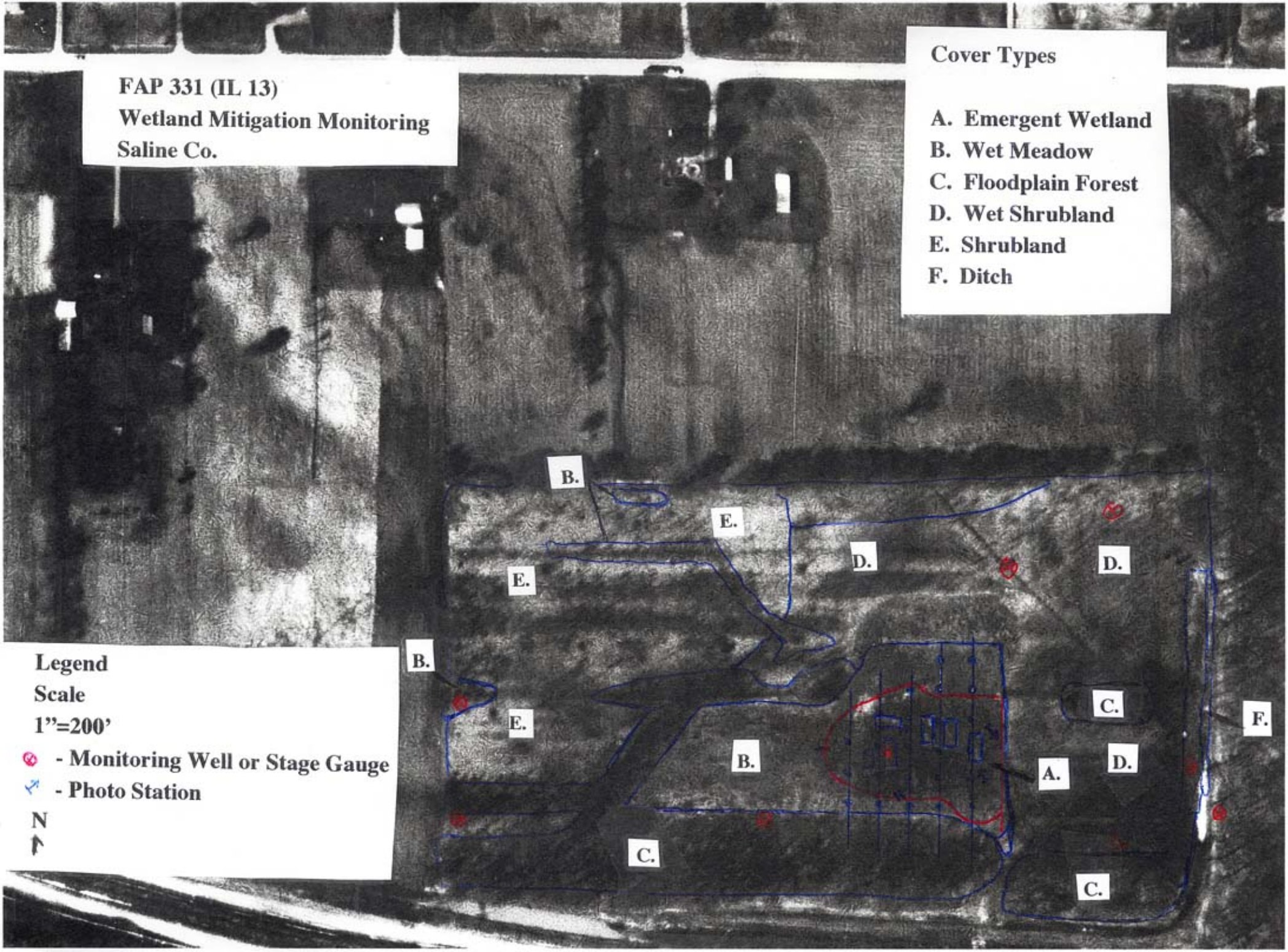
FQI=R/√N= 51/√18=12.0, mean C=R/N=51/18=2.8

Fig. 3. Photo location 1. Wet Meadow and Emergent Wetland

Fig. 4. Photo location 2. Emergent Wetland

Fig. 5. Photo location 3. Emergent Wetland

Fig. 6 Photo location 4. Emergent Wetland and Wet Meadow


FAP 331 (IL 13)
Wetland Mitigation Monitoring
Saline Co.
Cover Types
A. Emergent Wetland
B. Wet Meadow
C. Floodplain Forest
D. Wet Shrubland
E. Shrubland
F. Ditch
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Scale
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- Monitoring Well or Stage Gauge
- Photo Station
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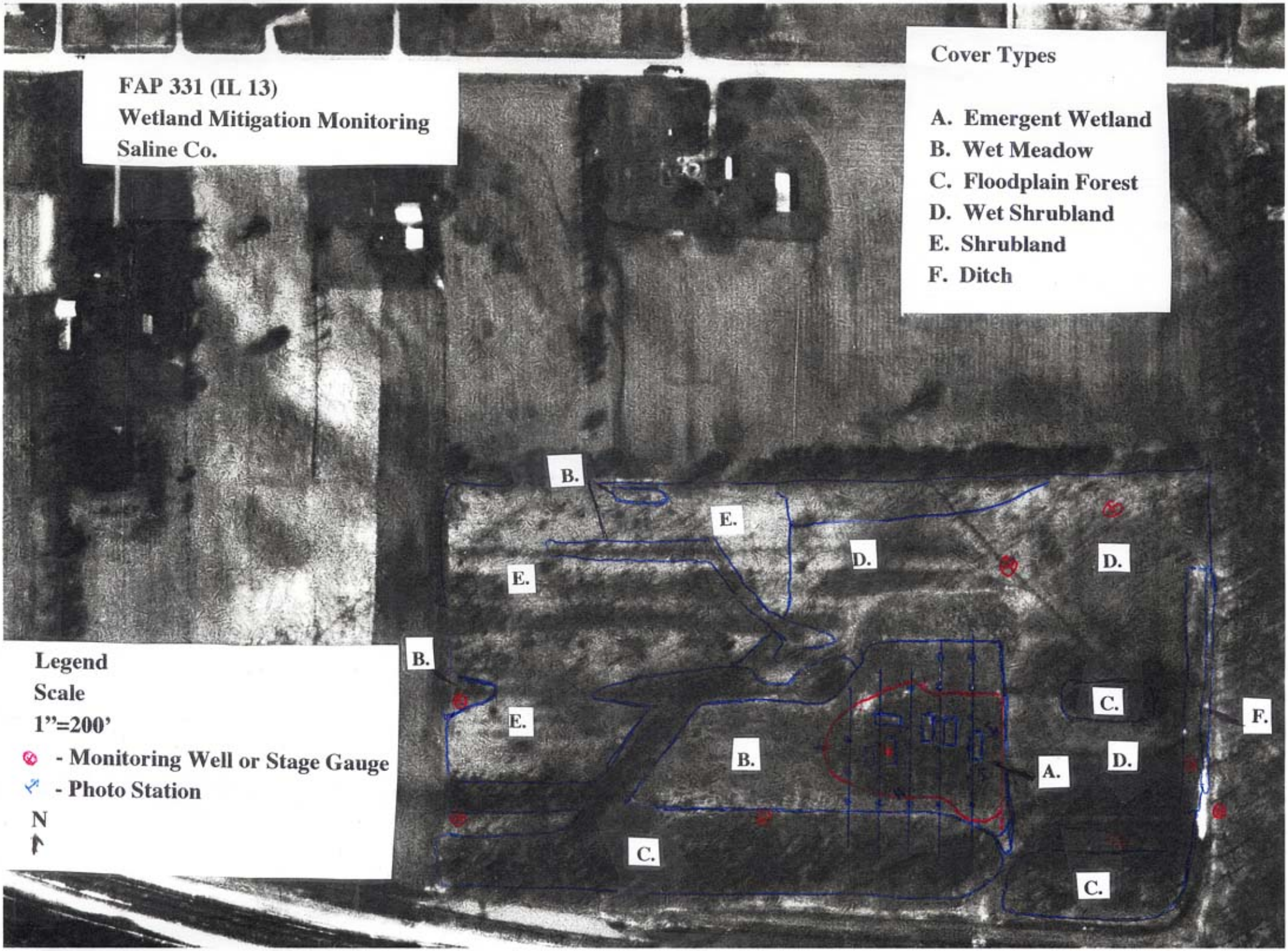
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- Photo Station
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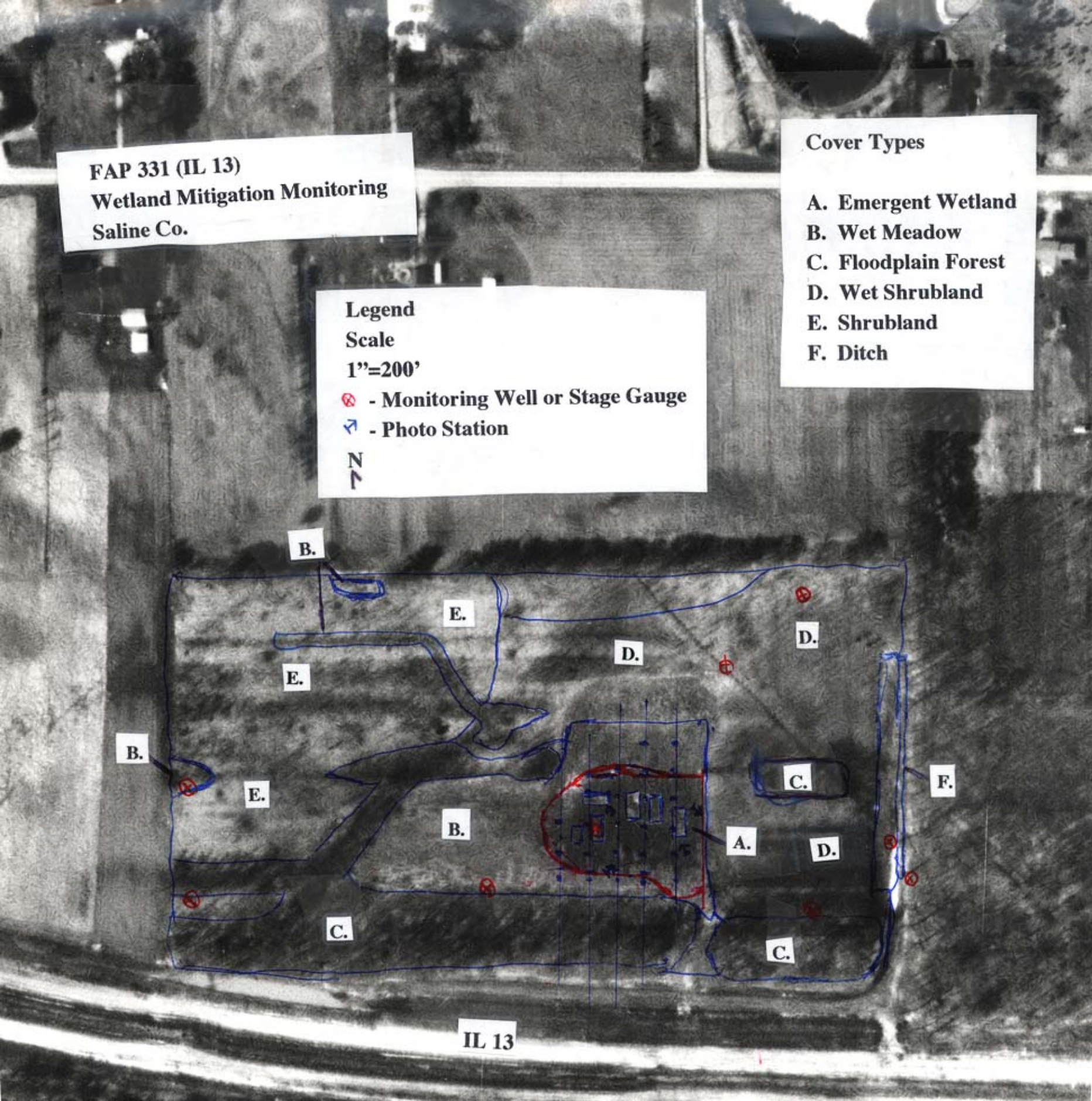
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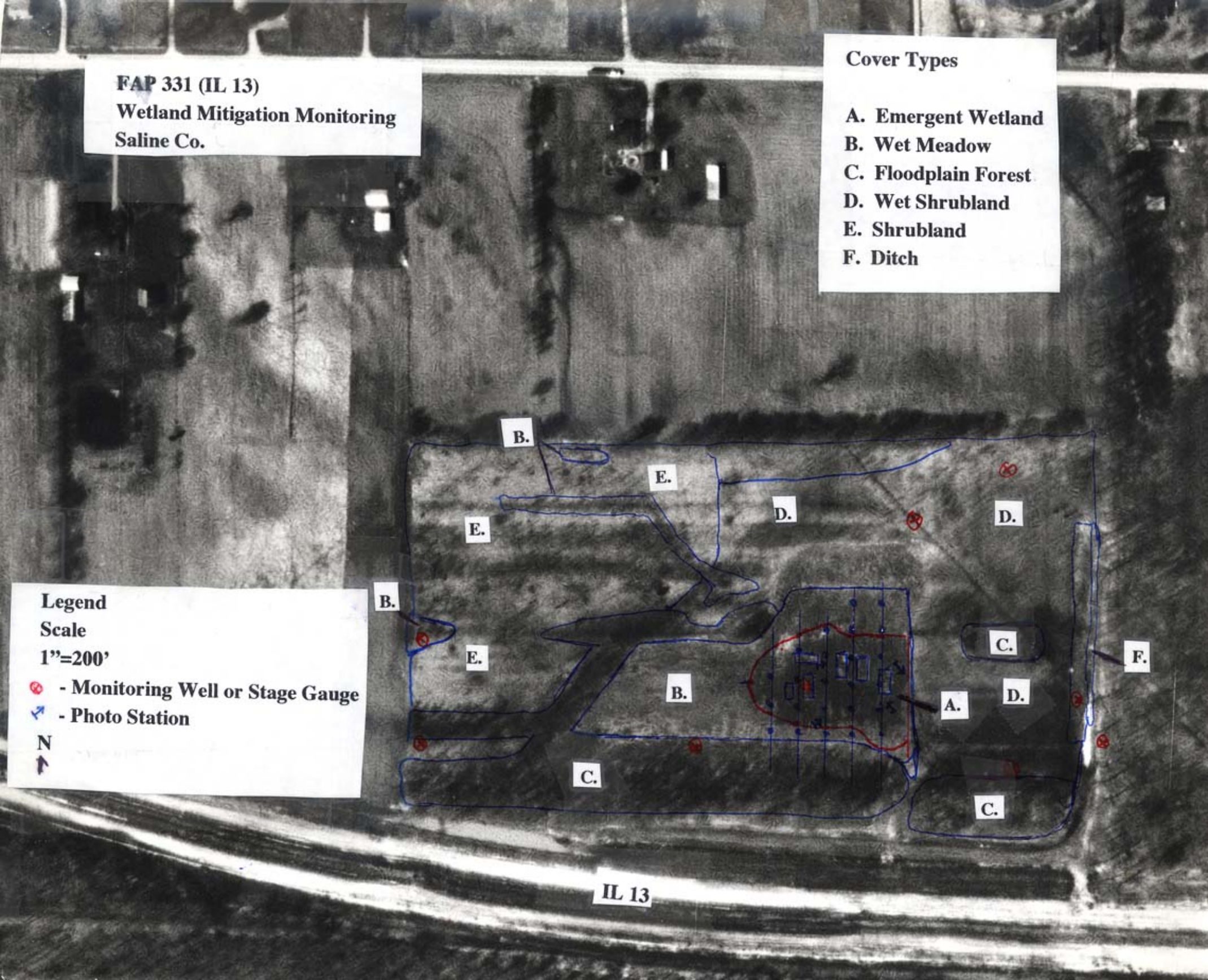
IL 13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1"=200'
- Monitoring Well or Stage Gauge
- Photo Station
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IL 13